Space Weather Forecast

Issued on Tuesday, 05 July 2022 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of isolated Minor Geomagnetic Storms, mainly on Days 1 and 2 (5th and 6th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with an isolated mid-level Common-class flare from a small sunspot region in the northeast quadrant at 04/1333UTC.

There are currently five numbered sunspot regions on the disc. A modestly large single spot located in the northeast quadrant, remains the largest spot but remains largely stable and inactive. Other spot groups are small and magnetically simple, with only small changes apparent in recent imagery. A possible new spot group is emerging near the northeast limb.

A possible CME associated with the Common-class flare mentioned above has yet to be assessed, pending updated imagery, and could potentially have a partial Earth directed component. Otherwise, no other Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind increased erratically from slow background levels to slightly elevated conditions for a time during the afternoon UTC of the 4th, before decreasing towards background again on the most recent observations. The number of particles in the solar wind showed an overall erratic downward trend, with early peaks well above average, to eventually lower back to average levels. The magnetic field associated with these particles was at moderate levels for much of the UTC day, before returning to weak levels in recent hours. The important north-south component showed some sustained spells of moderately southward orientation at the start of the period, and during the UTC afternoon. The above parameters likely indicated ongoing weak CME enhancement for much of the period, before waning towards the end of the day.

Geomagnetic activity was mainly Unsettled to Active, with a G1/Minor Storm interval recorded 04/0300-0600UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: A possible slow CME from 29 June may glance Earth on Day 1 (5th July), however confidence is very low with no significant impacts currently anticipated given the slow speed and lengthy transit time involved. No other Earth-directed CMEs currently feature in the forecast. However, a possible CME associated with the C5 flare on 4th has yet to be assessed, pending updated imagery, and could potentially have a partial Earth directed component.

Otherwise, solar winds are anticipated to increase from the current slightly elevated levels to elevated levels at times over the next 2 or 3 days as CH97/+ becomes geoeffective. Late in the

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

period solar winds should trend downwards again.

Geomagnetic activity is anticipated to begin mainly Quiet to Unsettled, with a decreased chance of further isolated Active intervals. Activity is then anticipated to rise again to Unsettled to Active conditions later on the 5th as CH97/+ becomes increasingly geoeffective, with a Chance of G1 being reached. Similar conditions are expected into Day 2 (6th), with a gradual waning trend then likely through Days 3 and 4 (7th and 8th).

Energetic Particles / Solar Radiation: In the absence of any significant sunspot development, no solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	30	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	1	1	1	1
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.